#8/4

SEQUENCE LISTING

(1) GENERAL INFORMATION:

    (i) APPLICANT: Fritz Eckstein
                                         Wolfgang Pieken
                                         Fritz Benseler
                                         David Olsen.
                                         David Williams

    (ii) TITLE OF INVENTION: MODIFIED RIBOZYMES

    (iii) NUMBER OF SEQUENCES: 8

    (iv) CORRESPONDENCE ADDRESS:

        (A) ADDRESSEE: Lyon & Lyon
        (B) STREET: 611 West Sixth Street
        (C) CITY: Los Angeles
        (D) STATE: California
        (E) COUNTRY: USA
        (F) ZIP: 90017

    (v) COMPUTER READABLE FORM:

        (A) MEDIUM TYPE: 3.5" Diskette, 1.44 Mb storage
          (B) COMPUTER: IBM Compatible
          (C) OPERATING SYSTEM: IBM P.C. DOS (Version 5.0)
          (D) SOFTWARE: WordPerfect (Version 5.1)

    (vi) CURRENT APPLICATION DATA:

        (A) APPLICATION NUMBER: 07/965,411
        (B) FILING DATE: August 9, 1993
        (C) CLASSIFICATION:

    (vii) PRIOR APPLICATION DATA:

        (A) APPLICATION NUMBER:
        (B) FILING DATE:

    (viii) ATTORNEY/AGENT INFORMATION:

        (A) NAME: Warburg, Richard J.
        (B) REGISTRATION NUMBER: 32,327
        (C) REFERENCE/DOCKET NUMBER: 195/036

    (ix) TELECOMMUNICATION INFORMATION:

        (A) TELEPHONE: (213) 489-1600
        (B) TELEFAX: (213) 955-0440
        (C) TELEX: 67-3510

(2) INFORMATION FOR SEQ ID NO: 1:

     (i) SEQUENCE CHARACTERISTICS:

          (A) LENGTH: 32
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

GATATCCTGA CTCCCTATAG TGAGTCGTAT TA   32

(2) INFORMATION FOR SEQ ID NO: 2:

     (i) SEQUENCE CHARACTERISTICS:

          (A) LENGTH: 36
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

TAATACGACT CACTATAGGG AGTCAGGATA TCTGCA   36

(2) INFORMATION FOR SEQ ID NO: 3:

     (i) SEQUENCE CHARACTERISTICS:

          (A) LENGTH: 51
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

GGAGTTTCGG CCTAACGGCC TCATCAGAGG ACCCTATAGT GAGTCGTATT A   51

(2) INFORMATION FOR SEQ ID NO: 4:

     (i) SEQUENCE CHARACTERISTICS:

          (A) LENGTH: 55
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

TAATACGACT CACTATAGGG TCCTCTGATG AGGCCGTTAG GCCGAAACTC CTGCA   55

(2) INFORMATION FOR SEQ ID NO: 5:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 34
                (B) TYPE: -   nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: ·5:

GGGUCCUCUG AUGAGGCCGU UAGGCCGAAA CUCC   34

(2) INFORMATION FOR SEQ ID NO: 6:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 27
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

GGGCCCGAGA GGCCGAGGCC GAAACCC   27

(2) INFORMATION FOR SEQ ID NO: 7:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 27
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

GGGCCCGAGA GGCCGAGGCC GAAACCC   27

(2) INFORMATION FOR SEQ ID NO: 8:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 22
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

GGGAGUCAGG AUGGGAGCAG GA   22

(2) INFORMATION FOR SEQ ID NO: 9:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 11
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

GGGAGUAGGA U   11

(2) INFORMATION FOR SEQ ID NO: 10:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 11
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

GGGAGCAGGA U   11

(2) INFORMATION FOR SEQ ID NO: 11:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 27
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

GGGCCCGAGA GGCCGAGGCC GAAACCC   27

(2) INFORMATION FOR SEQ ID NO: 12:

        (i) SEQUENCE CHARACTERISTICS:

                (A) LENGTH: 27
                (B) TYPE: nucleic acid
                (C) STRANDEDNESS: single
                (D) TOPOLOGY: linear

        (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

GGGCCCGAGA GGCCGAGGCC GAAACCC   27

(2) INFORMATION FOR SEQ ID NO: 13:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 13
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

GGGAGUCAGG AUN   13

(2) INFORMATION FOR SEQ ID NO: 14:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 12
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

GGGAGUCAGG AU   12

(2) INFORMATION FOR SEQ ID NO: 15:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 11
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

GGGAGCAGGA N   11

(2) INFORMATION FOR SEQ ID NO: 16:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 10
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

GGGAGCAGGA   10

(2) INFORMATION FOR SEQ ID NO: 17:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 6
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 17:

GGGAGC   6

(2) INFORMATION FOR SEQ ID NO: 18:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 6
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 18:

GGGAGU   6

(2) INFORMATION FOR SEQ ID NO: 19:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 10
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 19:

GGGAGCAGGA   10

(2) INFORMATION FOR SEQ ID NO: 20:

    (i) SEQUENCE CHARACTERISTICS:

        (A) LENGTH: 4
        (B) TYPE: nucleic acid
        (C) STRANDEDNESS: single
        (D) TOPOLOGY: linear

    (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 20:

AGGA   4

(2) INFORMATION FOR SEQ ID NO: 21:

     (i) SEQUENCE CHARACTERISTICS:

          (A) LENGTH: 6
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 21:

GGGAGC   6

(2) INFORMATION FOR SEQ ID NO: 22:

     (i) SEQUENCE CHARACTERISTICS:

          (A) LENGTH: 36
          (B) TYPE: nucleic acid
          (C) STRANDEDNESS: single
          (D) TOPOLOGY: linear

     (ii) SEQUENCE DESCRIPTION: SEQ ID NO: 22:

CACAACACUG AUGAGGCCGU UAGGCCGAAA CGGGCA   36